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ABSTRACT

To gain insight into a leader's ability to effect change by influencing group peers this study sought to identify structural properties and communication behavior characteristics of the school systems in which opinion leaders and isolates work, as they relate to a change strategy for vocational-technical education. Based on questionnaire data collected from a random sample of 57 vocational agriculture teachers, the study revealed that the success of an opinion leader is related to the definition of the peer group and to the school in which he teaches. (JS)

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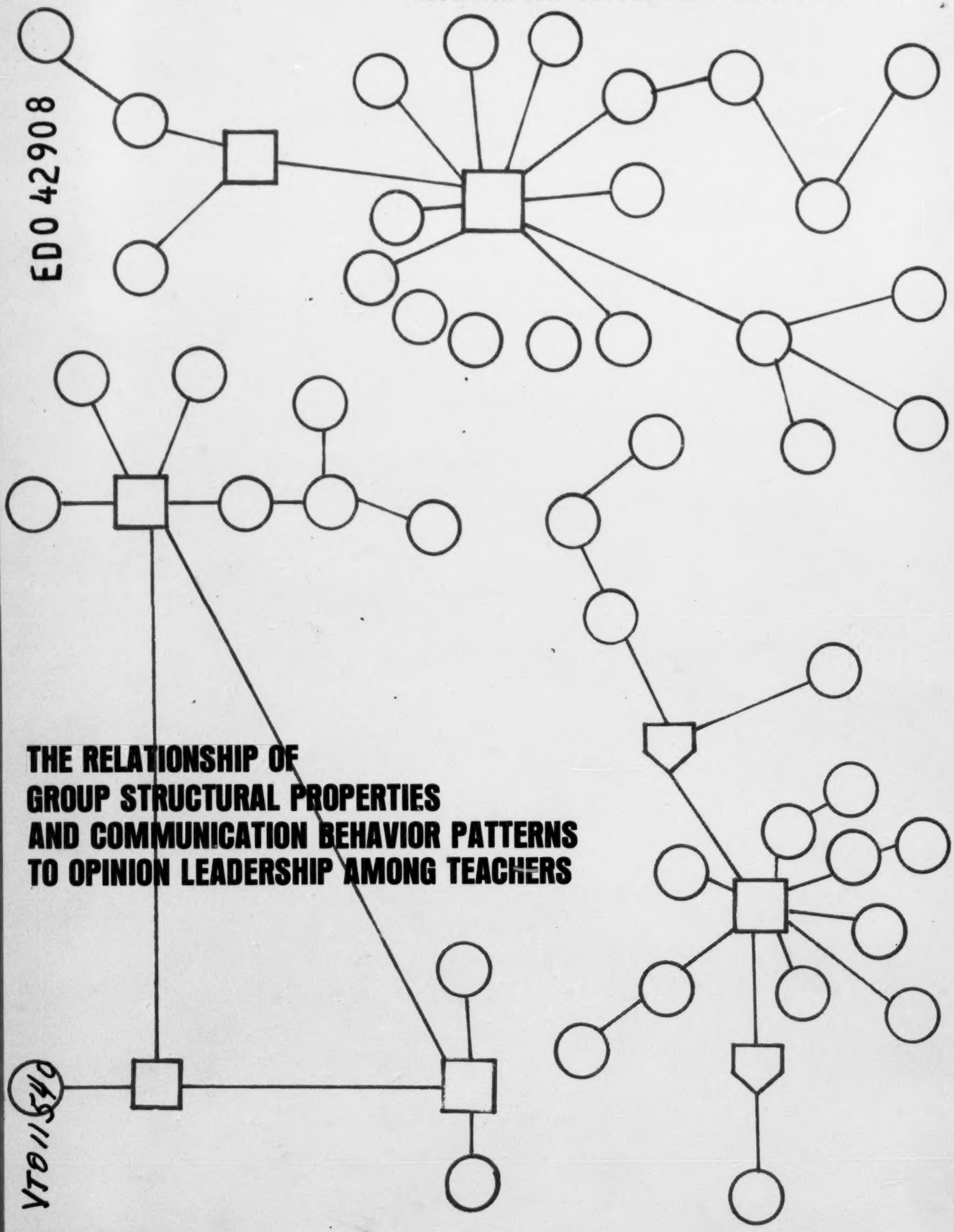

THE RELATIONSHIP OF GROUP STRUCTURAL PROPERTIES AND COMMUNICATION BEHAVIOR PATTERNS TO OPINION LEADERSHIP AMONG TEACHERS

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THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION
THE OHIO STATE UNIVERSITY, 1900 Kenny Rd., Columbus, Ohio 43210

The Center for Vocational and Technical Education has been established as an independent unit on The Ohio State University campus with a grant from the Division of Comprehensive and Vocational Education Research, U. S. Office of Education. It serves a catalytic role in establishing consortia to focus on relevant problems in vocational and technical education. The Center is comprehensive in its commitment and responsibility, multidisciplinary in its approach, and interinstitutional in its program.

The major objectives of The Center follow:

1. To provide continuing reappraisal of the role and function of vocational and technical education in our democratic society;

2. To stimulate and strengthen state, regional, and national programs of applied research and development directed toward the solution of pressing problems in vocational and technical education;

3. To encourage the development of research to improve vocational and technical education in institutions of higher education and other appropriate settings;

4. To conduct research studies directed toward the development of new knowledge and new applications of existing knowledge in vocational and technical education;

5. To upgrade vocational education leadership (state supervisors, teacher educators, research specialists, and others) through an advanced study and inservice education program;

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RESEARCH AND DEVELOPMENT SERIES NO. 41

THE RELATIONSHIP OF GROUP STRUCTURAL PROPERTIES AND COMMUNICATION BEHAVIOR PATTERNS TO OPINION LEADERSHIP AMONG TEACHERS

GARRY R. BICE

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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The Center for Vocational and Technical Education
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FINAL REPORT

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U.S. DEPARTMENT OF
HEALTH, EDUCATION AND WELFARE

Office of Education
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PREFACE

The need to build a system for the diffusion of innovations in vocational and technical education has been apparent for many years. Innovation adoption rate has lagged behind the capability for planned change demonstrated by educational technology. The willingness of people to accept new ideas is a critical link in any system for diffusing innovations. The ability of leaders to influence opinions deserves special consideration in any series of studies on planned change. This research report describes communication relationships among opinion leaders in local educational agencies. It is one of a series of studies of the change process in vocational and technical education.

This publication was prepared by Garry R. Bice, research associate at The Center. Assistance was provided by other members of the project team: Lloyd H. Blanton, research associate; William L. Hull, specialist in vocational education; and Earl B. Russell, research associate. The Center appreciates the help of Cecil H. Johnson, Jr., Director, Office of Vocational Education, South Carolina Department of Education, and William N. Pafford, Associate Professor of Science Education, East Tennessee State University, for their reviews of this report. Acknowledgment is given to the state supervisory staff in vocational agriculture in Vermont and the teachers who participated in this study.

Robert E. Taylor
Director,
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and Technical Education

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SUMMARY

The central purpose of the study was to identify structural properties and communication behavior characteristics (peer choice patterns) of the school systems in which opinion leaders and isolates among teachers of vocational agriculture work. The study was based on data received from 215 teachers working in four schools. Each of the schools included a randomly selected teacher of vocational agriculture who was an opinion leader among other agriculture teachers at the state level. The 215 teachers represented 86 percent of all the teachers employed in those schools. In addition, data were received from 57 teachers working in schools where four randomly selected teachers of vocational agriculture who were isolates among other agriculture teachers at the state level worked. The 57 teachers represented 84 percent of all teachers employed in those schools. The investigator personally administered the questionnaires to all teachers in group interview situations at regularly scheduled faculty meetings in their respective schools.

Teachers were placed into opinion leader and peer categories on the basis of the sociometric technique of identifying opinion leaders. Those individuals nominated as sources of advice and information by at least 10 percent of their peers were considered to be opinion leaders. In schools where there were less than 30 teachers, a teacher had to be nominated at least three times to be considered an opinion leader.

Findings and conclusions of the study included the following:

1. Teachers of vocational agriculture who were opinion leaders at the state level were not necessarily opinion leaders among all teachers at the local level but were likely to be opinion leaders among other vocational teachers at the local level.

2. Teachers of agriculture who were opinion leaders among other teachers of agriculture at the state level worked in schools where there was more upward communication in terms of innovation awareness, where a greater percentage of the teachers were opinion leaders, where there was a lower ratio of number of cliques to number of opinion leaders, and where a smaller percentage of the teachers were isolates.

3. Teachers of agriculture who were opinion leaders at the state level taught in larger schools in terms of number

of students, taught in schools where teachers had taught a fewer number of years in their current school, and taught in schools where there was more communication between teachers and state staff members.

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THE RELATIONSHIP OF GROUP STRUCTURAL PROPERTIES AND COMMUNICATION BEHAVIOR PATTERNS TO OPINION LEADERSHIP AMONG TEACHERS

CHAPTER I

THE PROBLEM AND ITS SETTING

INTRODUCTION

In the past few years, researchers and state supervisors in agricultural education have become particularly concerned with the lag between research and practice. An additional concern has been the feeling that large portions of research findings remain on library shelves and never find their way into the classroom. It has been suggested that one of the causes of this gap has been the lack of linking agents or interpreters between researchers and teachers. Since considerable investments have been expended to research, develop, and refine various types of educational innovations applicable to vocational-technical education, The Center for Vocational and Technical Education initiated a study in the area of opinion leadership as a pilot project to determine whether a larger effort in the study area of the change process would be fruitful for future research.[1]

The Center project found significant differences between personal and social characteristics among teachers of agriculture who were opinion leaders and those who were not. In addition, that project led researchers to ask several additional questions: Are teachers identified as opinion leaders at the state level also opinion leaders among other teachers in the school at the local level? Since teachers work within an organization (the school), are group structural properties and communication behavior characteristics of these organizations related to opinion leadership? Can group structural properties and communication behavior variables of opinion leader schools be readily identified? And, are there characteristic patterns of communication between teachers and state departments of education personnel?

If these questions could be answered, researchers would be further along the road toward understanding opinion leadership, the opinion leadership phenomenon, and the role which opinion

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[1] James H. Hensel and Cecil H. Johnson. *The Identification of Opinion Leaders Among Teachers of Vocational Agriculture*. The Center for Vocational and Technical Education. Columbus: The Ohio State University, 1969.

leaders might play in the change process in vocational-technical education.

Several generalizations can be made from the review of research and literature related to the identification of opinion leaders and their personal and social characteristics as follows:

1. The sociometric technique has been used most often with researchers to identify opinion leaders. The key informant technique correlates highest with the sociometric technique, followed by the self designating technique of identifying opinion leaders.

2. Opinion leaders: (a) held a particular interest and competence in the sphere of discussion from which they led; (b) had greater personal interaction through greater social participation; (c) were more innovative than the individuals upon whom they exerted personal influence; (d) were more cosmopolite than the individuals upon whom they exerted personal influence; (e) conformed more closely to the social system norms than other individuals in the social system; (f) used more impersonal, technically accurate, and cosmopolite sources of information than other individuals in the social system; (g) were accorded higher social status than individuals upon whom they exerted personal influence; (h) were older than the individuals upon whom they exerted personal influence; (i) had achieved a higher educational level than the individuals upon whom they exerted personal influence; (j) had higher incomes than the individuals upon whom they exerted personal influence; (k) may have been monomorphic or polymorphic in their spheres of influence; (l) held a disproportionate number of elected and appointed offices in formal organizations than did the individuals upon whom they exerted personal influence; (m) were characterized by a sense of belonging to the community and were inclined toward service for the community; (n) were exposed to the mass media to a greater extent than those upon whom they exerted personal influence.[2]

Many of these generalizations were reinforced by The Center study. A replication study of The Center project essentially corroborated these ideas and conclusions.

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[2] *Ibid.* pp. 15-16.

THEORETICAL FRAMEWORK

The overall theoretical framework for the current study originated in models of the process of change suggested by current researchers in the field.

Havelock suggests a social interaction model which emphasizes the diffusion aspect of change. According to Havelock, the social interaction model:

> ...has given us the theory of the two-step flow of knowledge and has thoroughly demonstrated the importance of such factors as opinion leadership, personal contact, and social integration.[3]

The model for change in agriculture, usually called the Agriculture Model, has been illustrated by several writers. This model may be shown schematically as in Figure 1.

> Havelock suggests the agriculture model as demonstrating (1) the principle of inclusion in its placement of basic research departments and an applied research department within the same university setting and presumably on the same footing; (2) ...a very effective use of specialized media (the looseleaf manual) as the major link between the extension specialist and the county agent; and (3) ...the use of permanent linking roles in agriculture for which that system is most famous--those of the county agent and the extension specialist.[4]

Havelock suggests an Education Model which is shown in Figure 2. This model suggests that there are linking mechanisms between various audiences and that these "linkers" need to be identified and their roles defined.

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[3]Ronald G. Havelock. *Planning for Innovation Through Dissemination and Utilization of Knowledge*. Center for Research on Utilization of Scientific Knowledge. Ann Arbor: The University of Michigan, 1969. pp. 2-43.

[4]Indiana University. *Conference on Emerging Roles in Educational Research, Development, and Diffusion*, Conference 2, *MODELS OF THE CHANGE PROCESS*. Mimeograph, Indiana University, December 1966. p. 1.

THE AGRICULTURE MODEL FOR CHANGE

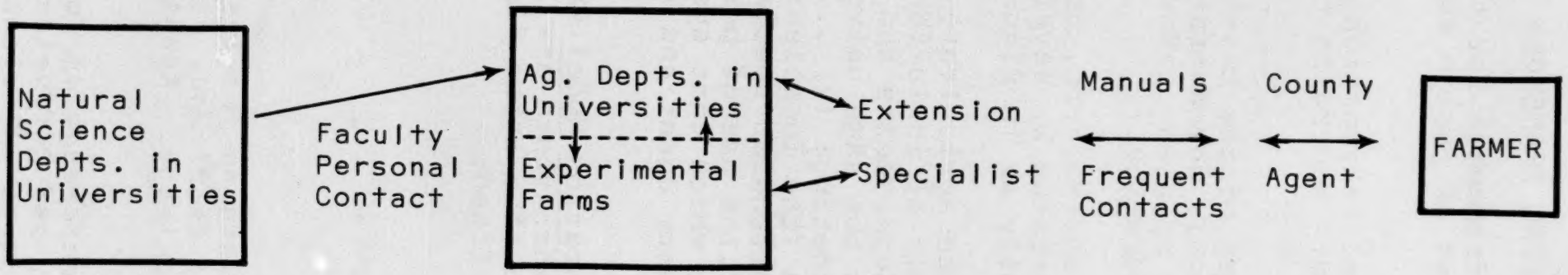

FIGURE I

Source: Indiana University, Models of the Change Process.

THE EDUCATION MODEL FOR CHANGE

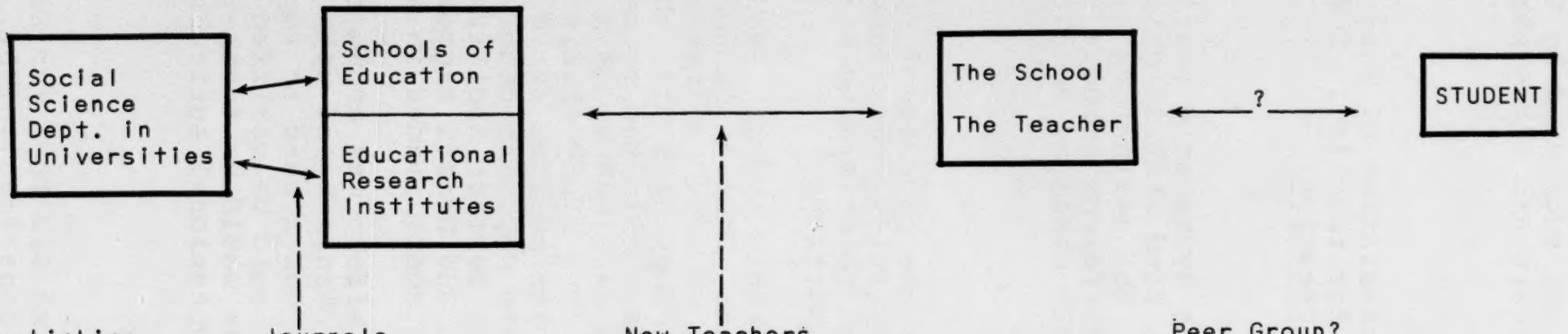

FIGURE 2

Source: Indiana University, Models of the Change Process.

Another education model has been suggested by Brickell. In this model, Brickell states that there are three phases of instructional innovation.

Phase 1: DESIGN

Program design is the translation of what is known about learning into programs for teaching. The process might be called invention or creation.

Phase 2: EVALUATION

Program evaluation is the systematic testing of a new instructional approach to find what it will accomplish under what conditions. The evaluation of programs by using them in many different schools under carefully controlled or closely observed conditions can be described as field testing.

Phase 3: DISSEMINATION

Program dissemination is the process of spreading innovations into schools. Hopefully, the innovations have been evaluated beforehand to determine what they will accomplish under what conditions.[5]

In the study of opinion leadership among teachers of vocational agriculture in South Carolina, Hensel and Johnson identified several variables which might be used to distinguish opinion leaders from non-opinion leaders. They felt that the ability to accurately identify opinion leaders considered to be influentials, was an important first step in the development of a strategy for change in agricultural education. The study thesis was that opinion leaders among teachers of agriculture serve as change agents in the field in much the same way that county extension agents of the Cooperative Extension Service facilitate change in the field of agriculture. Johnson and Hensel suggest that these opinion leaders may be the linking agent needed in education.

Since the Hensel and Johnson effort was among the first to attempt to develop a strategy for change based upon the opinion leader-change agent concept, there was a need to replicate his study. If methods and techniques could be verified as a means of identifying opinion leaders, a base would be further established upon which a change strategy for vocational agriculture education could be developed.

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[5]Henry M. Brickell. *Organizing New York for Educational Change*. Albany: State Education Department, 1961. pp. 62-63.

However, the strategy proposed by Johnson and Hensel is founded upon the idea that teachers of agriculture obtain ideas and information from other vocational agricultural teachers in the state in which they work, and that innovations are adopted and changes made accordingly. This strategy does not consider the vocational agriculture teacher as he functions within his local school, and how group structural and communication behavior patterns influence the innovation adoption and change behavior of the vocational agriculture teacher. Neither does this strategy consider the influence of the group structure and communication behavior of all teachers within a school upon the opinion leadership position of the teacher of agriculture among other teachers of agriculture in the state.

REVIEW OF LITERATURE RELATED TO STRUCTURE AND COMMUNICATION

The major hypothesis of the two-step flow of communication suggests that the decision to adopt or not adopt an innovation is as much a function of one's reference groups as it is of the characteristics of the individual. Briefly the hypothesis is that influences stemming from the mass media first reach "opinion leaders" who in turn pass on what they read and hear to those of their everyday associates for whom they are influential.[6] In relation to this Carlson suggests that:

> Communication and social structure. . .are closely linked. What ties them together is the fact that social structure influences communication patterns.[7]

What we need to do is to classify an individual according to his place in the social structure and find out if this differential placement in the social structure is related to his influence as an opinion leader.

> As with communication, social structure has been neglected in studies of educational innovation. The reasons are largely the same: The school system has been taken as the adopting unit and social structure deals not with

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[6]Elihu Katz. "The Two-Step Flow of Communication: An Up-to-Date Report of an Hypothesis." *Public Opinion Quarterly*, Vol. XXI, Spring 1957, p. 61.

[7]Richard O. Carlson. "Summary and Critique of Educational Diffusion Research." Paper presented at The National Conference on the Diffusion of Educational Ideas. East Lansing, Michigan, March 26-28, 1969. p. 10.

relationships among school systems but with relationships among people.[8]

Carlson has suggested that both communication patterns and social structure be looked at in relation to each other. If we consider this in view of the two-step flow of communication theory discussed above, it would seem that there is need to analyze opinion leaders in their relationship to the social structure in which they work, namely the school system. Analysis in terms of communication behavior patterns of all teachers within the system where the opinion leaders work, along with the social structure of the schools within which the opinion leaders work, also needs to be completed.

Lin defined a group's structural properties in terms of numbers of isolates, cliques, opinion leaders, and liaisons within the group.[9] He further defined group communication behavior patterns in terms of amount of upward, downward, and horizontal communication.

Marcum, in a study of 30 schools in five western states to determine factors which cause or inhibit change in a school organization, found several variables which contrasted innovative and less innovative schools.[10] The variables found to be significant were:

1. Innovative schools had open climates.
2. Innovative schools had higher expenditures per student.
3. Innovative schools had lower average age of staff.
4. Innovative schools had fewer number of years of staff service.
5. Innovative schools had a larger professional staff.

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[8]*Ibid.*

[9]Nan Lin. "Innovative Methods for Studying Innovation in Education." Lansing, Michigan: Research Coordinating Unit, Department of Education, 1968. pp. 119-125.

[10]R. Laverne Marcum. *Organizational Climate and the Adoption of Educational Innovations*. Logan: Utah State University, February 1969. ED 028 517.

Riggs, in a Utah study of the internal organization of junior high schools for instruction, concluded that schools with a student-teacher ratio of 20:1 and under were more innovative and had more administrative positions than those with a higher ratio.[11]

PURPOSE OF THE STUDY

The central purpose of this study was to identify structural properties and communication behavior characteristics of the groups in which opinion leaders and isolates work, as they relate to a change strategy for vocational-technical education.

SPECIFIC OBJECTIVES

The following specific objectives were identified in order to facilitate the development of this study:

1. To determine if opinion leaders and isolates at the state level maintain the same degree of opinion leadership at the local school level.

2. To identify group structural properties associated with opinion leadership in local schools.

3. To identify key communication variables associated with opinion leadership.

4. To determine the extent and type of communication linkages between local teachers and state department of education personnel.

METHODOLOGY

In order to accomplish the study objectives, a plan consisting of two distinct phases was formulated. Phase I consisted of identifying opinion leaders and isolates among teachers of agriculture in the selected state. This phase was essentially a replication of Center Project 63 using the same procedures and techniques, with the data collection instruments adapted to meet the needs in the state. Adaptations of the instrument included changing the names on lists of magazines and journals, breakdown of the areas offered in the vocational agriculture program, and other minor changes. It was felt that the changes did not alter the face validity of the instrument.

[11]Norman D. Riggs. *The Internal Organization of Junior High Schools for Innovation.* Salt Lake City: Utah State Board of Education, June 1968. ED 023 156.

The investigator administered the questionnaire to the teachers of vocational agriculture in a group interview situation at their state teachers meeting in August 1969. A total of five polymorphic opinion leaders and nine isolates were identified from the sociometric data gathered. A teacher nominated by 10 percent of his peers in two or more instructional areas was considered a polymorphic opinion leader. Random selection of four polymorphic opinion leaders and four isolates constituted the sample for Phase II of the study.

Phase II consisted of collecting relevant data from all teachers working in the school buildings where the four agriculture opinion leaders and the four agriculture isolates worked. The data collected in Phase II consisted of demographic data about the schools, sociometric information about teachers and information concerned with amount and type of communications with state department of education personnel.

Data were coded and analyzed on electronic data processing equipment. In comparing differences between the two groups of schools, the Randomization test was used, with the level of significance set at .05.[12] The Randomization test was used because it is designed to be used with small samples and considers all available data in calculations thereby making the test 100 percent efficient and as powerful as the t-test.[13]

In addition, sociometric charts were drawn and analyzed to identify opinion leaders, isolates, cliques, peer choice patterns and related group structural properties. The following procedures were used in the analysis.

For Phase I - identification of opinion leaders among teachers of agriculture at the state level - a teacher had to be nominated as a source of advice and information by at least 10 percent of his fellow teachers in order to be considered an opinion leader. To be considered a polymorphic opinion leader, a teacher must have been nominated by at least 10 percent of his fellow teachers in two or more of the different areas of the instructional program in vocational agriculture. If a teacher was nominated a total of two times or less in the 10 different areas of the program in vocational agriculture, he was considered to be an isolate. The questionnaire used to identify polymorphic opinion leaders and isolates is included as Appendix A.

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[12]Sidney Siegel. *Nonparametric Statistics for the Behavioral Sciences*. New York: McGraw-Hill Book Company, Inc. 1956. pp. 152-156.

[13]*Ibid.*

For Phase II - identification of structural properties and communication patterns in local schools - a teacher must have been nominated as a source of advice and information by at least 10 percent of his fellow teachers in order to be considered an opinion leader. In schools where there were fewer than 30 teachers, a teacher had to be nominated by at least three other teachers in order to be considered an opinion leader. If a teacher was not nominated by another teacher and in turn failed to nominate another teacher, he was considered to be an isolate. If a teacher either nominated another teacher or was nominated by other teachers but not enough to be considered an opinion leader, the teacher was considered to exert "some leadership."

A subgroup of teachers who had no peer choice connections with the largest group of teachers who interacted with one another was considered to be a minor clique.

A teacher whose absence from the group structure would break one connected group into at least two separated subgroups, each consisting of at least two teachers, was considered to be a primary liaison teacher.[14] And finally, a teacher whose absence, paired with the absence of another teacher, would break one connected group into at least two separated subgroups, each consisting of at least two teachers was considered to be a secondary liaison teacher.[15]

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[14]Nan Lin. *op. cit.* p. 124

[15]*Ibid.*

CHAPTER II

FINDINGS

Findings are reported in five sections. Section I describes the schools and teachers involved in the study. Section II includes a discussion of the carry over of opinion leadership from the state to the local level. Section III is concerned with the relationship of group structural properties to opinion leadership. Section IV considers findings concerned with the relationship of communication variables to opinion leadership. Section V is a discussion of communication linkages between teachers and state department of education personnel.

DESCRIPTION OF SCHOOLS AND TEACHERS

At the annual convention of teachers of vocational agriculture in the State of Vermont in August, 1969, 29 teachers of vocational agriculture completed questionnaires for the study. Two teachers did not attend the convention and failed to return questionnaires mailed to them. Of the 29 teachers, nine had been teaching in the state for less than two months and could not complete the questionnaire. Consequently, usable data were obtained from 20 teachers of agriculture. Analysis of the data revealed that five of the teachers were polymorphic opinion leaders, which means that they were opinion leaders for more than one area of the vocational agriculture program. Nine teachers were considered to be isolates, since they were selected as sources of advice and information two times or less.

Four of the polymorphic opinion leaders and four of the isolates were randomly selected to form the basis for the sample for Phase II.

In Phase II, data were collected from 272 teachers in eight high schools in the State of Vermont during the period January 7-16, 1970. Of the two hundred fifty teachers employed in the four schools where the teacher of agriculture had been identified as a polymorphic opinion leader in Phase I, 215 (86 percent) completed questionnaires for the study. Fifty-seven (83.8 percent of the teachers employed) completed questionnaires in the four schools where the teacher of agriculture had been identified as an isolate in Phase I. Those teachers not completing questionnaires were absent from school the day the questionnaire was

administered. Questionnaires were completed during group interview sessions at regularly scheduled faculty meetings in each of the schools. The questionnaire is included in Appendix C.

CHARACTERISTICS OF SCHOOLS

Basic demographic data were gathered during personal interviews with principals in each of the eight schools. The form used to record these data is included in this report as Appendix C, Form A. The data are recorded in Appendix D.

Analysis of the data reveals that there were differences between the two groups of schools. Since these differences were quite apparent by inspection, the Randomization test was used to determine if the differences between the two groups of schools were statistically significant. The tests reveal that schools employing teachers of agriculture who were opinion leaders had a significantly greater number of teachers, students, administrators and secretaries as well as a higher per pupil expenditure than the schools employing agriculture teacher-isolates. The number of teachers, administrators and secretaries is probably a function of the larger number of students. Other differences not related to size of school which exist, although not at a statistically significant level, include the percent of student body turnover and those schools employing teacher of agriculture opinion leaders had a higher percentage of new students transferring into the system.

The means for each group of schools on each characteristic, the difference in the means and the probability level of these differences are recorded in Table 1.

CHARACTERISTICS OF TEACHERS

It was believed that some basic information concerning characteristics of teachers in the two groups of schools would be desirable. Data were recorded on six different characteristics, (Appendix E). The data revealed that there were some differences among teachers in the two groups of schools, although the differences were not great. It was noted, however, that teachers in opinion leader employing schools had taught a fewer number of years in their present schools, had taken more college courses since beginning to teach, and had heard about or discussed more innovations than had teachers in isolate employing schools. This tended to support the emerging theory that opinion leader employing schools were more innovative and therefore more cosmopolite than isolate employing schools. (Rogers defined "cosmopoliteness" as

TABLE I

PROBABILITY LEVELS OF DIFFERENCES BETWEEN SELECTED OPINION LEADER EMPLOYING AND ISOLATE EMPLOYING SCHOOLS IN THE STATE OF VERMONT IN JANUARY 1970

Characteristics of Schools	Mean for Opinion Leader Employing Schools	Mean for Isolate Employing Schools	Difference	Probability Level
Number of Teachers	62.30	17.50	44.80	.014
Number of Students	978.50	288.50	690.00	.014
Number of Administrators (F.T.E.)[a]	3.50	1.25	2.25	.014
Student:Guidance and Counseling Personnel (F.T.E.) Ratio	285:1	245:1	40.00	.200
Number of Secretaries (F.T.E.)	4.50	1.00	3.50	.014
Number of Teacher Aides (F.T.E.)	.75	.50	.25	.071
Percent of Students Enrolled in Vocational Courses	29.90	36.40	6.50	.200
Percent of Students Enrolled in Vocational Agriculture Courses	6.40	12.50	6.10	.100
Student:Teacher Ratio	16.0:1	16.5:1	.50	.171
Percent of Student Body Who Transferred Into System This Year	4.9	3.1	1.80	.200
Percent of Student Body Who Transferred Out of System This Year	1.2	1.1	.10	.200

Continued

Table 1 Continued

Per Pupil Expenditure	939.00	748.25	190.75	.042

[a]Full-Time-Equivalent

the degree to which an individual's orientation is external to a particular social system.)[16]

The Randomization test was used to determine if teachers in the groups of schools differed significantly with respect to the characteristics recorded. Teachers in opinion leader employing schools had taught a fewer number of years in their present schools than had teachers in isolate employing schools. The probability level was .014. In addition, teachers in opinion leader employing schools had taken a greater number of college courses since beginning to teach (probability .028).

Table 2 records the statistical data for characteristics of teachers.

FINDINGS RELATED TO OBJECTIVES

CARRY OVER OF OPINION LEADERSHIP

One of the objectives of the study was to determine if there was a carry over of opinion leadership from the state level to the local level. This was studied by identifying those teachers who were opinion leaders and isolates at the state level, then determining the degree of opinion leadership those same teachers exerted at the local level. This was also a way of studying whether or not subject matter expertise was a crucial factor in opinion leadership.

Inspection of the sociometric charts (Figures 3-10) revealed that of the four opinion leaders at the state level, two were indeed opinion leaders in their local schools. The other two were not isolates and did exert some leadership within their local schools. On the other hand, of the four isolates at the state level, none were opinion leaders in their local schools. Three of the state level isolates exerted some leadership at the local level and one was an isolate.

[16]E. M. Rogers. *Diffusion of Innovations*. New York: Free Press, 1962. p. 17.

TABLE 2

PROBABILITY LEVELS OF DIFFERENCES
OF TEACHERS IN OPINION LEADER EMPLOYING
AND ISOLATE EMPLOYING SCHOOLS
IN THE STATE OF VERMONT
IN JANUARY 1970

Characteristics of Teachers	Mean for Opinion Leader Employing Schools	Mean for Isolate Employing Schools	Difference	Probability Level
Mean Age	36.75	38.75	2.00	.057
Mean Number of Years of Teaching Experience	11.25	10.25	1.00	.200
Mean Number of Different Schools Taught In	2.25	2.50	0.25	.200
Mean Number of Years Teaching in Present School	4.50	6.75	2.25	.014
Mean Number of College Courses Taken Since Beginning To Teach	8.25	6.50	1.75	.028
Mean Number of Innovations Heard About or Discussed in Last Six Months	7.00	5.50	1.50	.057

Since there was some variation in the degree of opinion leadership exerted by the state level opinion leaders and state level isolates, the chi-square statistic was used to determine if these differences were significant. A chi-square value of 3.20 was obtained which did not reach the critical value of 5.99 needed to be significant at the .05 level with two degrees of freedom. Table 3 records data related to the first objective of the study.

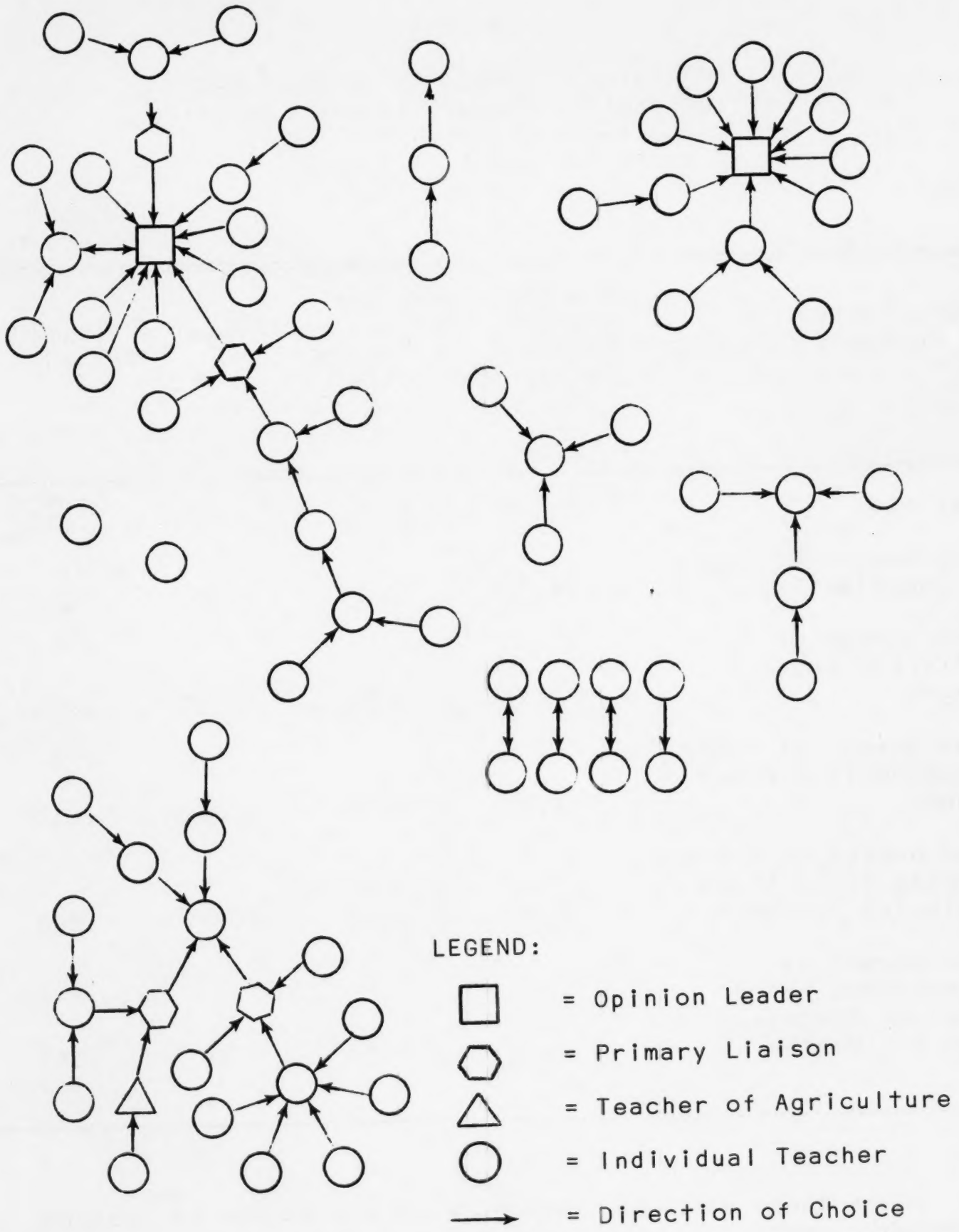


FIGURE 3. Peer Choice Patterns of Teachers in Opinion Leader Employing School A in Vermont in 1970

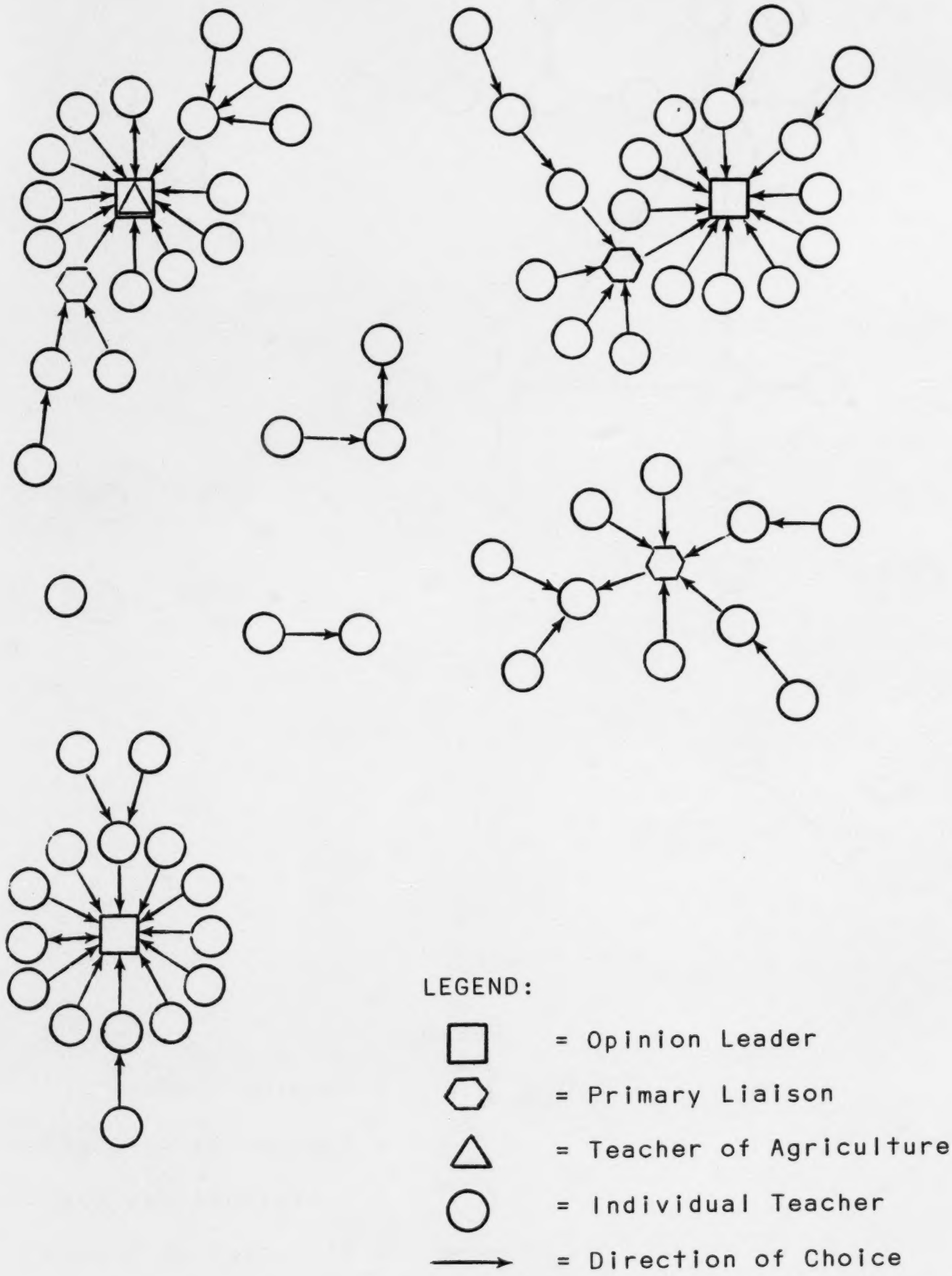


FIGURE 4. Peer Choice Patterns of Teachers in Opinion Leader Employing School B in Vermont in 1970

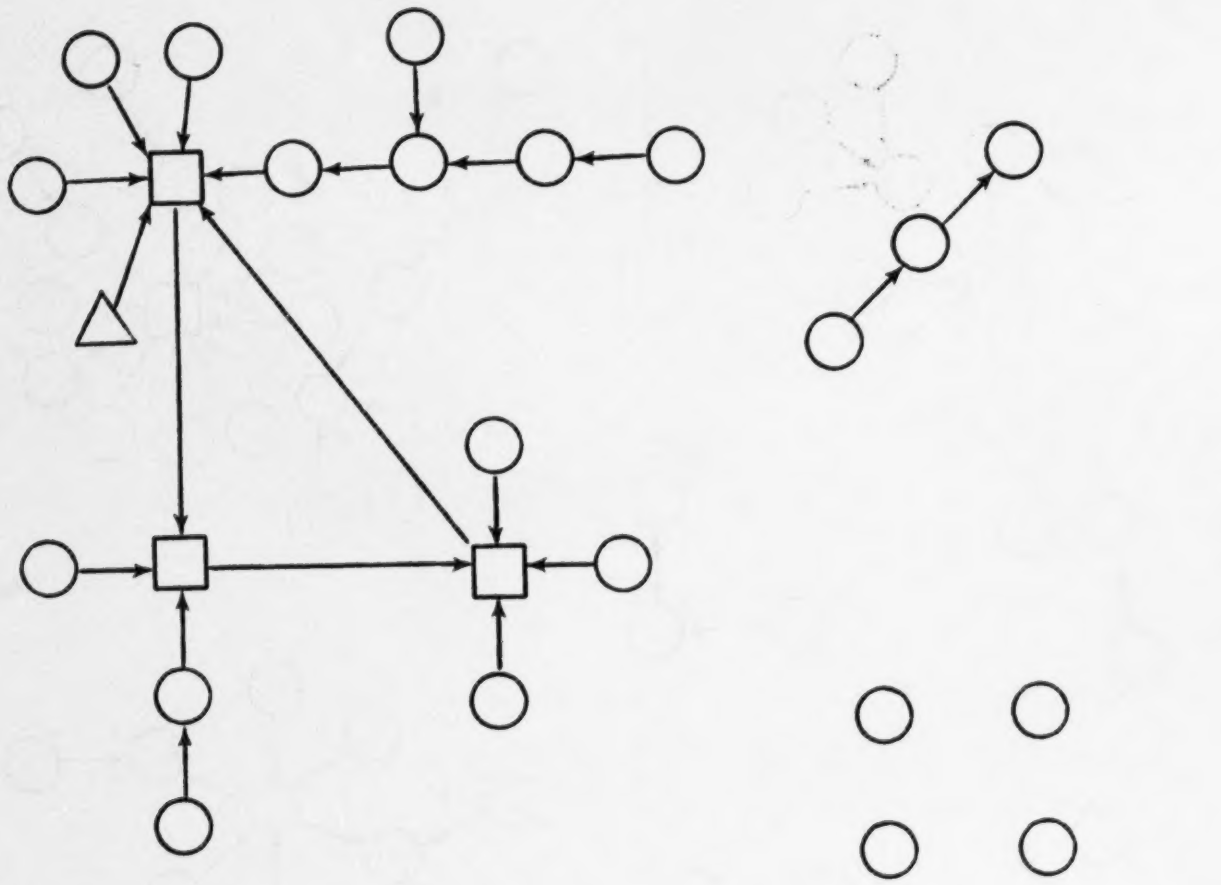


FIGURE 5. Peer Choice Patterns of Teachers in Opinion Leader Employing School C in Vermont in 1970

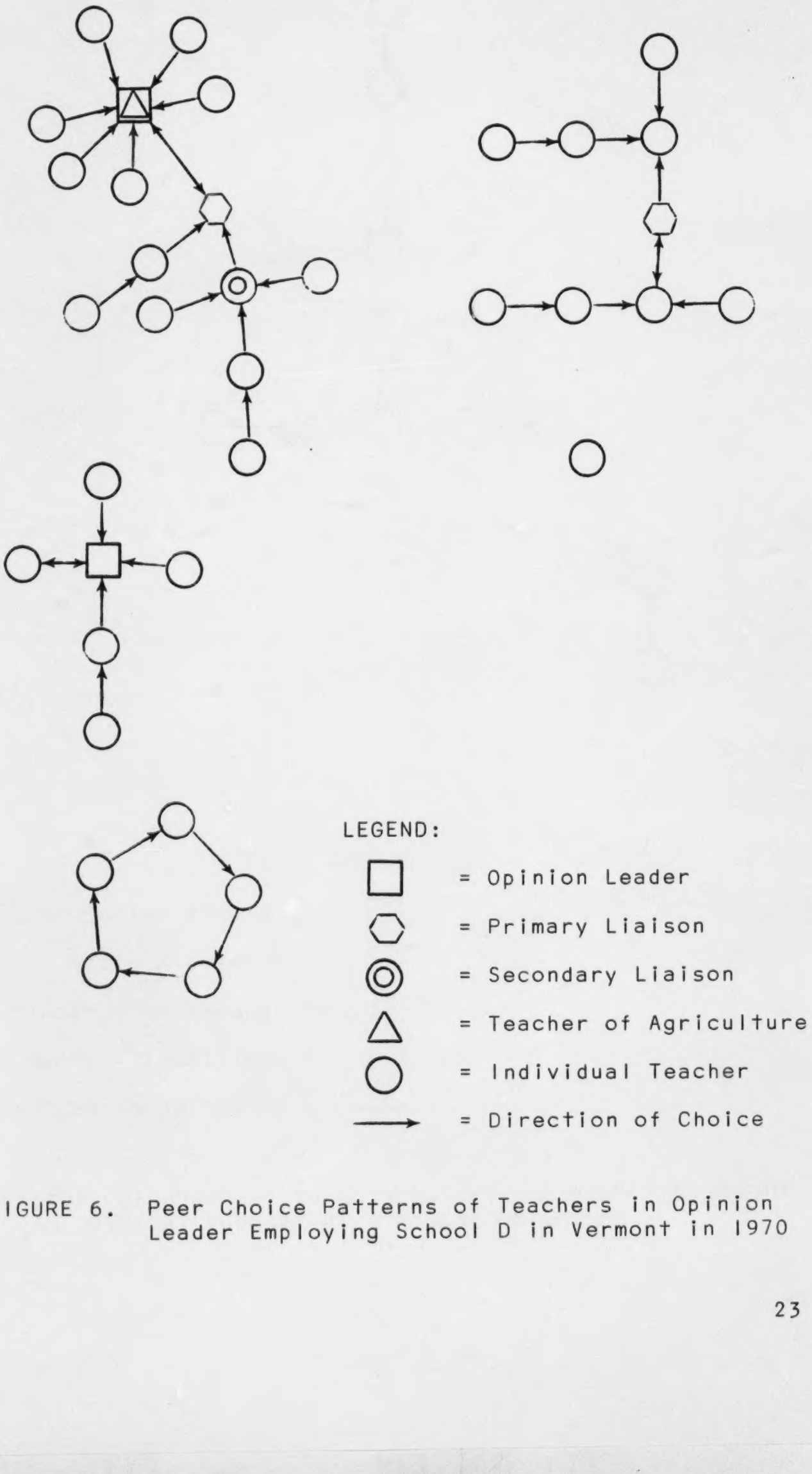
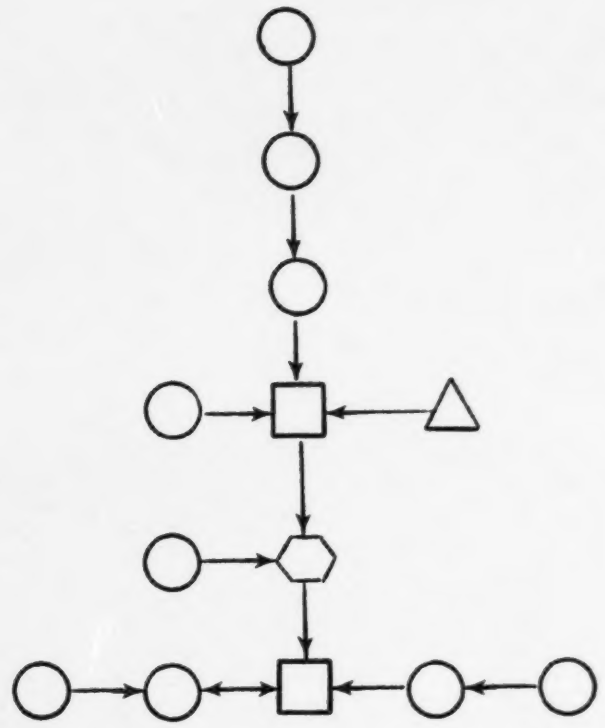
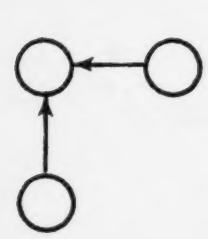
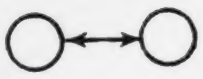


FIGURE 6. Peer Choice Patterns of Teachers in Opinion Leader Employing School D in Vermont in 1970







LEGEND:

= Opinion Leader

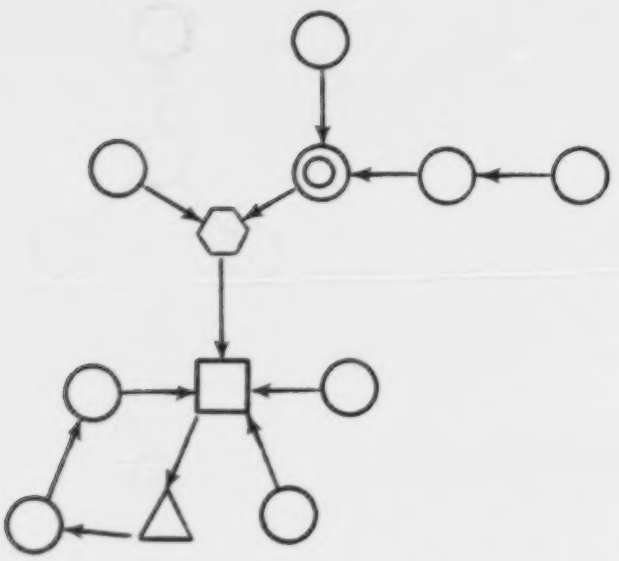
= Primary Liaison

= Teacher of Agriculture

= Individual Teacher

= Direction of Choice

FIGURE 7. Peer Choice Patterns of Teachers in Isolate Employing School E in Vermont in 1970



LEGEND:

□ = Opinion Leader

⬡ = Primary Liaison

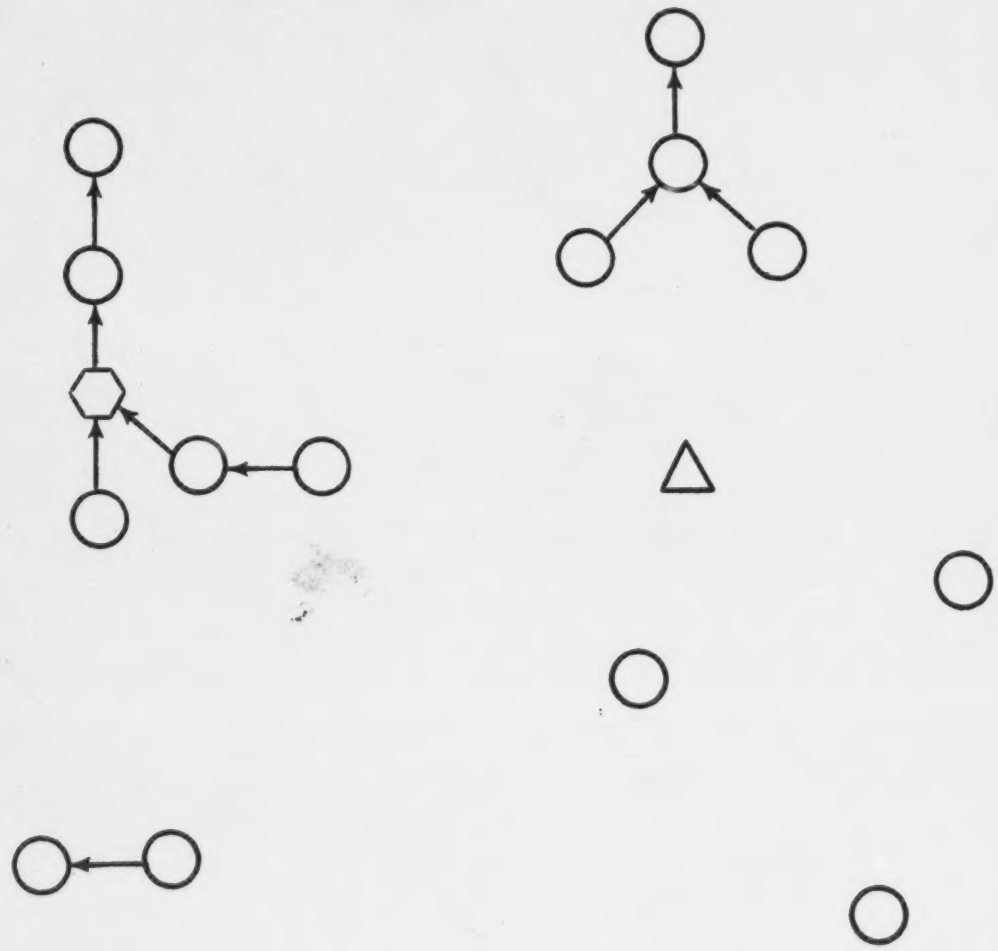
△ = Teacher of Agriculture

◎ = Secondary Liaison

○ = Individual Teacher

→ = Direction of Choice

FIGURE 8. Peer Choice Patterns of Teachers in Isolate Employing School F in Vermont in 1970



LEGEND:

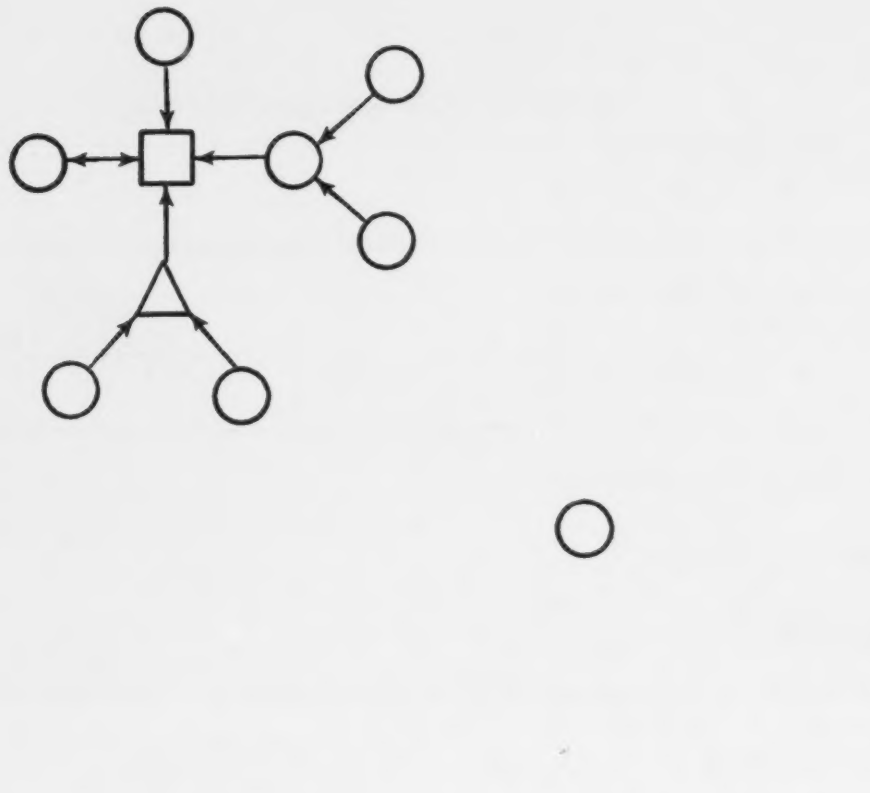
= Primary Liaison

= Teacher of Agriculture

= Individual Teacher

= Direction of Choice

FIGURE 9. Peer Choice Patterns of Teachers in Isolate Employing School G in Vermont in 1970



LEGEND:

△ = Teacher of Agriculture

○ = Individual Teacher

□ = Opinion Leader

→ = Direction of Choice

FIGURE 10. Peer Choice Patterns of Teachers in Isolate Employing School H in Vermont in 1970

TABLE 3

DEGREE OF OPINION LEADERSHIP EXERTED
BY TEACHERS OF AGRICULTURE AT THE STATE AND LOCAL LEVELS

Degree of Opinion Leadership Exerted at the Local Level	Degree of Opinion Leadership Exerted at the State Level	
	Opinion Leader N = 4	Isolate N = 4
Opinion leader	2	0
Some leadership	2	3
Isolate	0	1

Critical Value at .05 = 5.99 d.f. = 2
Chi-Square = 3.20

Even though no strong statistical relationships were identified, it was noted that the four teachers of agriculture who were opinion leaders at the state level were nominated a total of 18 times at the local level. Over two-thirds (13) of the nominations were by other vocational teachers. The four teachers of agriculture who were isolates at the state level were nominated a total of only three times at the local level. Two of those nominations were by other vocational teachers.

RELATIONSHIP OF GROUP STRUCTURAL PROPERTIES TO OPINION LEADERSHIP

The second objective of the study was to determine the relationship between group structural properties of the local school and degree of opinion leadership exerted by the teacher of agriculture. It has been suggested that group structural properties at the local level "cause" or influence the degree of opinion leadership the teacher of agriculture exerted among other teachers of agriculture in the state.

Group structural properties were defined as percent of teachers who were opinion leaders in the school, percent of teachers who were isolates in the school, percent of teachers who were in primary liaison positions among teachers, percent of teachers who were in secondary liaison positions among teachers and the ratio of number of minor cliques to number of opinion leaders in the

school. Each group structural property was determined by analyzing sociometric charts of teachers in the school. The sociometric charts (Figures 3-10) were developed by asking teachers to "Name three teachers whose opinions you most frequently seek when you have problems related to your teaching." Group structural data are summarized in Table 4.

TABLE 4

GROUP STRUCTURAL PROPERTIES
OF TEACHERS IN OPINION LEADER EMPLOYING
AND ISOLATE EMPLOYING SCHOOLS
IN VERMONT IN 1970

Structural Property	Opinion Leader Employing Schools	Isolate Employing Schools
	Percent of Teachers N = 215	Percent of Teachers N = 57
Opinion leaders	6.0	3.5
Isolates	5.3	9.8
Primary liaisons	3.8	3.5
Secondary liaisons	.5	1.8

The Randomization test was used to determine if the differences between the two groups of schools were significant. Although none of the differences approached significance at the .05 level the differences were in the direction predicted. Opinion leader employing schools had a greater percentage of teachers who were opinion leaders and a lower ratio of number of minor cliques to number of opinion leaders. When data related to percentage of teachers who were isolates were compared, results were misleading. In opinion leader employing schools, 5.3 percent of the teachers were isolates. This was compared to isolate employing schools where 9.8 percent of the teachers were isolates. The data could be misleading if one loses sight of the fact that isolate employing schools had fewer teachers. Even though a mean of 9.8 percent of the teachers in isolate employing schools were isolates, it was noted that there were no isolates in two of those schools.

COMMUNICATION PATTERNS AMONG TEACHERS

Communication patterns were determined in terms of date of innovation awareness of teachers. In order to analyze data related to the third objective of the study, a two step procedure was required. First, sociometric data had to be considered in order to determine who teachers sought for advice and information related to their teaching. Secondly, dates of innovation awareness of both the nominator and the nominee had to be analyzed. In analyzing direction of communication, the following guidelines were used:

1. If teacher A became aware of the innovation at an earlier date than his nominee, teacher B, the direction of communication was down.

2. If teacher C became aware of the innovation at a later date than his nominee, teacher D, the direction of communication was up.

3. If both the nominator and the nominee became aware of the innovation during the same month, the direction of communication was horizontal.

4. Teachers who considered themselves as isolates were given a horizontal communication classification.

Directions of communications are illustrated in Figure 11.

The innovation used to determine date of innovation awareness was the use of the overhead projector for classroom instruction. This innovation was used for the following reasons:

1. It was an innovation that had been given much exposure in magazine and journal articles.

2. Various commercial organizations had advocated the use of the overhead projector through demonstrations, short courses and advertising materials.

3. It was an innovation that an individual teacher could adopt or reject.

4. Since communication (peer choice) patterns among all teachers in the school had to be determined, it was necessary to use an innovation that was pervasive in nature and would not be restricted to use by any one group of teachers, regardless of age, subject matter taught, or number of years of teaching experience.

	Nominator	Nominee	Direction of Communication
Date of Awareness	(A) June 1, 1965	(B) September 1, 1967	DOWN
Date of Awareness	(C) September 1, 1966	(D) February 1, 1965	UP
Date of Awareness	(E) September 15, 1968	(F) September 15, 1968	HORIZONTAL

FIGURE 11. Method of Analyzing Direction of Communication.

Adopted from Nan Lin. "Innovative Methods for Studying Innovation in Education." *op. cit.* pp. 119-125.

The data in Table 5 revealed that in opinion leader employing schools, 58.9 percent of the peer nominations were upward, whereas in isolate employing schools 31.3 percent of the nominations were upward. Horizontal peer nominations were 11.9 percent and 24.8 percent respectively for opinion leader employing and isolate employing schools. In opinion leader employing schools, 29.2 percent of the peer nominations were downward with 43.9 percent of peer nominations in a downward direction in isolate employing schools.

For each of the directions of communication, the randomization test was used to determine if differences between the two groups of schools were significant. It was evident that opinion leader employing schools did in fact have a greater amount of upward communication among teachers (probability .028). In addition, opinion leader employing schools had less horizontal communication (probability .042) and a smaller amount of downward communication (probability .057).

TABLE 5

PERCENT OF UPWARD, HORIZONTAL, AND DOWNWARD COMMUNICATION IN OPINION LEADER EMPLOYING AND ISOLATE EMPLOYING SCHOOLS

Direction of Peer Nomination	Percent of Communication									
	Opinion Leader Employing Schools					Isolate Employing Schools				
	A	B	C	D	Mean	E	F	G	H	Mean
Upward	59.5	71.2	46.5	58.4	58.9	50.0	31.5	23.5	20.0	31.3
Horizontal	8.8	5.6	25.0	8.3	11.9	16.7	25.7	47.1	10.0	24.8
Downward	31.7	23.2	28.5	33.3	29.2	33.3	42.8	29.4	70.0	43.9

COMMUNICATION LINKAGES

The theoretical framework developed for the study suggested that there were linkages between local teachers and state department of education personnel. To examine the extent of communication between teachers and state department people, the study

considered methods of communication, amount of communication, and who initiated the communication. In addition, the study considered the purpose of the communications in terms of type of information sought and type of information received.

Data were analyzed in two ways. First, differences between all teachers in opinion leader employing and isolate employing schools were considered. Then, differences between vocational teachers and other teachers were analyzed.

Amount of Communication: Of the 215 teachers completing questionnaires in opinion leader employing schools, 147 teachers (68.4 percent) indicated that they had communicated with state department of education personnel during the preceding year. Those teachers reported that they had communicated an average of 10.2 times with state staff personnel, with 4.9 of the communications being teacher initiated and 5.3 being initiated by state staff.

Of the 57 teachers completing questionnaires in isolate employing schools, 38 teachers (66.7 percent) indicated that they had communicated with state department of education personnel during the preceding year. Those teachers reported that they had communicated an average of 8.3 times with state staff personnel, with 4.7 of the communications being teacher initiated and 3.6 being initiated by state staff.

The data indicated that teachers in opinion leader employing and isolate employing schools initiated about the same amount of communications with state staff. However, it appeared that state staff personnel initiated more communications with teachers in opinion leader employing schools than they did with teachers in isolate employing schools. Data related to amount of communications are reported in Table 6.

Method of Communication: In analyzing communication linkages, it was necessary to determine if teachers in opinion leader employing schools used different methods of communication than did teachers in isolate employing schools. It was decided to divide method of communication into the three categories of: 1) telephone, 2) mail or written, and 3) individual on a face-to-face basis. In analyzing the data in Table 7, it was revealed that mail or written was the most common method of communication followed by individual face-to-face contacts. Telephone communications were used to a lesser degree. The data also revealed that state staff personnel initiated more mail or written communications with teachers in opinion leader employing schools than they did with teachers in isolate employing schools. In general, teachers initiated more communications via the telephone than did state staff personnel.

TABLE 6

FREQUENCY OF COMMUNICATIONS BETWEEN TEACHERS AND STATE DEPARTMENT OF EDUCATION PERSONNEL

Schools	Total Teacher N	Number Teachers Communicating	Percent Teachers Communicating	Teacher Initiated Communication	State Initiated Communication	Total Communication Per Teacher
	Source and Amount of Communication					
Opinion leader employing						
A	79	55	69.6	221	228	8.1
B	73	53	72.6	339	323	12.5
C	28	21	75.0	89	79	8.0
D	35	18	51.4	82	140	12.3
$\bar{X}$	53.8	36.8	68.3	4.9	5.3	10.2
Isolate employing						
E	18	13	12.2	48	57	8.1
F	12	8	66.7	18	18	4.5
G	17	8	47.1	71	10	10.1
H	10	9	90.0	41	54	10.5
$\bar{X}$	14.3	9.5	66.7	4.7	3.6	8.3

TABLE 7

FREQUENCY AND METHOD OF COMMUNICATION BETWEEN TEACHERS AND STATE DEPARTMENT OF EDUCATION PERSONNEL

Method	Frequency			
	Teachers in Opinion Leader Employing Schools N = 147		Teachers in Isolate Employing Schools N = 38	
	Number of Communi-cations	Mean per Teacher	Number of Communi-cations	Mean per Teacher
Teacher Initiated:				
telephone	190	1.3	66	1.7
mail	338	2.2	59	1.6
individual	208	1.4	53	1.4
State Staff Initiated:				
telephone	129	0.9	20	0.5
mail	474	3.2	80	2.1
individual	182	1.2	39	1.0

Purpose of Communications: Another purpose of the study was to determine if patterns of communications could be identified in terms of type of information sought and type of information received. The classifications used were quite gross in nature; therefore, the information should be used only as a basis for future study.

The data indicated that teachers in isolate employing schools more often sought and received specific ideas relating to curriculum and teaching methods. Those teachers sought and received general information and specific directions less frequently than teachers in opinion leader employing schools. The opposite was true in opinion leader employing schools. Teachers in those schools more frequently sought general information and specific directions. They made fewer requests for specific ideas related to curriculum and teaching methods and in turn received fewer specific ideas.

COMPARISON OF COMMUNICATION LINKAGES

In comparing teachers of vocational subjects with teachers of other subjects in terms of amount of communication, the data in Table 8 indicated that there was consistently more communication between vocational teachers and state department of education personnel than there was between other teachers in the school and state department personnel. In addition, and as reported earlier, teachers in opinion leader employing schools had more communications with state department personnel than did teachers in isolate employing schools.

Isolate employing schools: In isolate employing schools, vocational teachers initiated over twice as much mail or written communication with state staff members as did other teachers in the school. In addition, vocational teachers initiated more face-to-face communications with state staff than did other teachers in their schools. On the other hand, vocational teachers initiated slightly fewer telephone communications than did other teachers. State staff members initiated more telephone and mail or written communications to vocational teachers than they did with other teachers. However, state staff members initiated the same amount of face-to-face communications with vocational teachers as they did with other teachers.

Vocational teachers in isolate employing and opinion leader employing schools: In all situations considered, vocational teachers in opinion leader employing schools initiated more communications with state staff members than did vocational teachers in isolate employing schools. Further, state staff members initiated more communications (of the types considered) with vocational teachers in opinion leader employing schools than they did with vocational teachers in isolate employing schools.

TABLE 8

FREQUENCY AND METHOD OF COMMUNICATION
BY VOCATIONAL TEACHERS AND OTHER TEACHERS

Type of Communication	Isolate Employing Schools		Opinion Leader Employing Schools	
	Vocational Teachers N = 10	Other Teachers N = 28	Vocational Teachers N = 41	Other Teachers N = 99
No. Teacher Initiated				
Communications per teacher:				
by telephone	1.3	1.8	2.3	1.1
by mail or written	2.5	1.2	3.1	2.1
by face-to-face	1.8	1.2	2.3	1.0
TOTAL	5.6	4.2	7.7	4.2
No. State Staff Initiated				
Communications per teacher:				
by telephone	1.5	0.2	1.6	0.6
by mail or written	5.8	0.8	7.0	1.6
by face-to-face	0.5	0.5	2.2	0.8
TOTAL	7.8	1.5	10.8	3.0

SUMMARY OF COMMUNICATION LINKAGES

Much of the data gathered in relation to communication linkages was not specific in nature, so only gross generalizations can be made. In general, the data revealed that there was more communication between teachers in opinion leader employing schools and state staff members than between teachers in isolate employing schools and state staff members. In addition, vocational teachers in both opinion leader and isolate employing schools had more communications with state staff members than did other teachers (both teacher and state staff initiated).

SUMMARY OF FINDINGS

The study revealed that there were some statistically significant differences between schools where agriculture teacher opinion leaders worked and schools where agriculture teacher isolates worked. Opinion leaders among teachers of vocational agriculture at the state level worked in schools where there were greater numbers of students, teachers, full-time-equivalent administrators, full-time-equivalent secretaries, and where the per pupil expenditure was greater. In addition, agriculture teacher opinion leaders worked in schools where teachers had taught a fewer number of years in their present school, teachers had taken a greater number of college courses since they began to teach, and where there was a greater amount of upward communication in terms of innovation awareness among teachers. These data are summarized in Table 9.

Multiple linear regression computations revealed that number of students and amount of upward communications were positively related to opinion leader employing schools (probability .05).[17] In addition, upward communication patterns were positively correlated with school size in terms of number of students (probability .05), and tenure of teachers was negatively correlated with school size in terms of number of students (probability .05). The correlation matrix for these data is reported in Table 10.

The summary table reveals that the two most potent variables considered in the study were number of students in the school and the number of college courses the teachers had taken since they began to teach. These data are reported in Table 11.

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[17] *Biomedical Computer Programs*. W. J. Dixon, editor, B.M.D., Los Angeles: University of California, Health Sciences Computing Facility, September 1965. p. 233.

TABLE 9

CHARACTERISTICS OF OPINION LEADER EMPLOYING AND ISOLATE EMPLOYING SCHOOLS

Characteristics	Mean for Opinion Leader Employing School	Mean for Isolate Employing School	Difference
Number of Teachers	62.30	17.50	44.80[a]
Number of Students	978.50	288.50	690.00[a]
Number of Administrators (F.T.E.)[b]	3.50	1.25	2.25[a]
Student : Guidance and Counseling Personnel (F.T.E.) Ratio	285:1	245:1	40.00
Number of Secretaries (F.T.E.)	4.50	1.00	3.50[a]
Number of Teacher Aides (F.T.E.)	.75	.50	.25
Percent of Students Enrolled in Vocational Courses	29.90	36.40	6.50
Percent of Students Enrolled in Vocational Agriculture Courses	6.40	12.50	6.10
Student : Teacher Ratio	16.0:1	16.5:1	.50
Percent of Student Body Who Transferred into System This Year	4.90	3.10	1.80
Percent of Student Body Who Transferred Out of System This Year	1.20	1.10	0.10

[a]Probability $< .05$
[b]Full-Time-Equivalent

Continued

Table 9 Continued

Characteristics	Mean for Opinion Leader Employing School	Mean for Isolate Employing School	Difference
Per Pupil Expenditure	939.00	748.25	190.70[a]
Mean Age of Teachers	36.75	38.75	2.00
Mean Number of Years of Teaching Experience	11.25	10.25	1.00
Mean Number of Different Schools Taught In	2.25	2.50	0.25
Mean Number of Years Teaching in Present School	4.50	6.75	2.25[a]
Mean Number of College Courses Taken Since Beginning to Teach	8.25	6.50	1.75[a]
Mean Number of Innovations Heard About or Discussed in Last Six Months	7.00	5.50	1.50
Percent of Teachers Who Are Opinion Leaders	6.00	3.50	2.50
Percent of Teachers Who Are Isolates	5.30	9.80	4.50
Ratio of Number of Cliques To Number of Opinion Leaders	1.4:1	2.5:1	1.1
Percent of Teachers Who Are Primary Liaisons	3.80	3.50	.30
Percent of Upward Communication	58.40	31.30	27.10[a]

[a] Probability < .05

TABLE 10

COEFFICIENTS OF CORRELATION OF SELECTED FACTORS IN OPINION LEADER EMPLOYING AND ISOLATE EMPLOYING SCHOOLS

Variables	Variables					
	X_1	X_2	X_3	X_4	X_5	X_6
X_1	1.00	0.81[a]	0.63	0.81[a]	-0.67	0.66
X_2		1.00	0.69	0.83[a]	-0.76[a]	0.31
X_3			1.00	0.55	-0.59	0.01
X_4				1.00	-0.61	0.40
X_5					1.00	-0.50
X_6						1.00

[a]Probability $<$ .05

Variables:

X_1 = opinion leader employing school

X_2 = number of students

X_3 = per pupil expenditure

X_4 = percent of upward communication among teachers

X_5 = tenure of teachers in present school

X_6 = number of college courses taken since beginning to teach

TABLE II

FACTORS CORRELATED WITH OPINION LEADER EMPLOYING SCHOOLS

Variable	R	R^2	Increase In R^2
Number of Students	0.81	0.65	0.65
Number of College Courses Teachers Have Taken Since Beginning to Teach	0.92	0.84	0.19
Per Pupil Expenditure	0.95	0.90	0.06
Tenure of Teachers in Present School	0.97	0.94	0.04
Percent of Upward Communications Among Teachers	0.97	0.95	0.01

CHAPTER III

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

On the basis of the data collected during the course of the study, certain conclusions with attendant implications were drawn by the investigators. These in turn led to recommendations for additional study.

CONTINUITY OF OPINION LEADERSHIP

As stated, one objective of the study was "To determine if opinion leaders and isolates at the state level maintain the same degree of opinion leadership at the local school level." In relation to this objective, findings were not statistically conclusive. However, it was noted that two-thirds of the nominations received by the teacher of agriculture at the local level were from other vocational teachers.

CONCLUSION

A teacher identified as an opinion leader in a broad subject area (such as vocational education) at the state level may be expected to be an opinion leader in the broad subject area at the local level.

IMPLICATION

Leaders in vocational education can identify those teachers considered to be opinion leaders in one of the vocational service areas at the state level and then expect that teacher to be an opinion leader among other vocational teachers in his local school. These opinion leaders then, may be one of the "linkers" between state staff personnel and teachers. With the linker identified, effective and efficient diffusion strategies may be developed, utilizing the linker's influence among his peers as one of the key elements in reaching many teachers.

GROUP STRUCTURAL PROPERTIES

A second objective of the study was "To identify group structural properties associated with opinion leadership." Group structural properties were considered in terms of percent of teachers who were opinion leaders, isolates, primary liaisons, secondary liaisons, and the ratio of number of minor cliques among teachers to the number of opinion leaders. The Randomization test was utilized to determine if those properties differed in opinion leader employing and isolate employing schools. Although no statistically significant differences were identified, the differences were in the direction and of the magnitude predicted as a result of the review of literature.

CONCLUSION

Opinion leader employing schools as identified in this study, have a greater percent of teachers who are opinion leaders and primary liaisons. Isolate employing schools have a greater percent of teachers who are isolates and secondary liaisons. Isolate employing schools also have a higher ratio of number of minor cliques to opinion leaders.

IMPLICATION

The conclusions imply that local school group structural properties may in fact be related to the degree of opinion leadership exerted at the state level. In addition, this indicates that group structural properties in local schools might have an important role in "causing" a teacher to be an opinion leader or isolate. Futher, there is the implication that group structural properties may be as important as other variables suggested, such as teacher personality, in influencing a teacher's opinion leadership position. Indeed, there is the possibility that local school group structural properties influence the teachers' personality.

COMMUNICATION (PEER CHOICE) PATTERNS

The third objective of the study was "To identify key communication variables associated with opinion leadership." Data in the study revealed that 58.9 percent of peer nominations in opinion leader employing schools were upward in terms of time of innovation awareness. In isolate employing schools, 31.3 percent of the peer nominations were upward. In opinion leader employing schools, 11.9 percent of the peer nominations were horizontal and 29.2 percent were downward. In isolate employing schools, peer nominations were 24.8 percent horizontal and 43.9 percent downward.

In addition, upward communication patterns were positively correlated to school size (+0.833).

CONCLUSION

Communication (peer choice) patterns differ between opinion leader employing and isolate employing schools. Opinion leader employing schools have more desirable patterns with more upward communications and less horizontal and downward communication. Further, amount of upward communication in local schools is positively related to the degree of opinion leadership teachers exert among other teachers at the state level.

IMPLICATIONS

Data support the implication that in developing diffusion strategies for vocational service areas, communication patterns for innovation awareness among teachers should be considered. There is the further implication that since upward communication patterns are so highly correlated with school size that it can be simply assumed that there will be more upward communication in terms of innovation awareness among teachers in larger schools. And, with more upward communication, innovations should diffuse more rapidly, indicating that larger schools may be the most potent schools in which to introduce innovations.

COMMUNICATION LINKAGES

The study considered the extent and type of communication linkages between teachers in local schools and state department of education personnel. The data revealed that teachers in opinon leader employing and isolate employing schools initiate about the same amount of communications with state department personnel. However, state department personnel initiated more communications with teachers in opinion leader employing schools than with teachers in isolate employing schools.

CONCLUSIONS

There are more communications between teachers in opinion leader employing schools and state department personnel than between teachers in isolate employing schools and state department personnel.

IMPLICATIONS

The implication is that possibly teachers become opinion leaders because they have more contact with state department personnel, thereby receiving more ideas and information relating to educational innovations. In addition, there is the implication that state department personnel should make concerted efforts to communicate more with teachers in smaller schools. Further, since opinion leaders are employed in larger schools, and since those teachers communicate more with state department personnel, there is the implication that opinion leaders are selected because their peers perceive them as being more innovative, indicating a possible Hawthorne effect in opinion leader selection.

RECOMMENDATIONS

The recommendations for further research listed herein are based on the findings and conclusions drawn from this study and the impressions gained by the investigator while conducting the study.

FURTHER RESEARCH ON VARIABLES

Since many of the tests on the independent variables did not reach statistical significance, there is need for further study in the area. The need exists for more intensive study and identification, classification, and measurement of independent variables.

Further study is needed on the identification of variables which are associated with opinion leadership among teachers. There is need to emphasize qualities as well as quantities of the factors. New statistical techniques should be tried to draw out those factors most associated with opinion leadership. Investigation of such variables as teacher personality, school and community norms and values, and type of administrative leadership should be undertaken. Further work is needed to classify variables in terms of those most related to individual teachers, those related to the groups in which the teacher works, and those related to the social order of which the organization (the school) is a part. Further study is needed to obtain more accurate measures of variables. More accurate methods of measuring innovation awareness are needed. Above all, there is need to replicate the study using a larger sample of schools to get more accurate measures of variables. In addition, this study should be replicated utilizing teachers in other subject matter areas as a basis of comparison.

FURTHER RESEARCH ON RELATIONSHIPS

The present study concerned itself primarily with the relationship of two groups of variables to opinion leadership.

OPINION LEADERSHIP AND GROUP STRUCTURE

The present study was concerned with certain group structural properties (i.e., number of opinion leaders, number of isolates, number of cliques, etc.) as they relate to the degree of opinion leadership exerted by a teacher when he functioned in another group. A study of the relationship of structural properties to opinion leadership is needed which compares a teacher's influence in two different groups with similar structural properties.

OPINION LEADERSHIP AND COMMUNICATION PATTERNS

A study is needed which compares communication patterns over a greater period of time. Also needed are better measurements of actual communication patterns with less dependence upon recall by teachers. Study of communication patterns should start with innovations that are new to every teacher.

GROUP STRUCTURE AND COMMUNICATION PATTERNS

There is need to study the interrelationships of group structure and communication patterns particularly over a long period of time. There is need to determine if one of the variables causes the pattern of the other.

COMMUNICATION LINKAGES

There is need to study why there are more communications between teachers in opinion leader employing schools and state department personnel. Case studies would be appropriate to get exact measures of frequency and content of communications.

SIZE OF SCHOOL

Since size of school in terms of number of students was such an important factor in this study, there is need to study why this is true. Is it because larger schools attract more innovative or cosmopolite teachers? Or, are there other reasons?

ADDITIONAL INVESTIGATIONS

The current study has revealed that there are several "slippery" variables which should be considered. It is suggested that the phenomenon of young teachers be investigated. Do younger teachers have greater social and communication competence than their older counterparts and how does this relate to their opinion leadership? To what extent does the physical location of the teacher's classroom affect communication patterns? Is physical proximity more important than teacher personality or subject matter expertise? And, are teacher attitudes toward change and innovation affected by such factors as the school per pupil expenditure and attitudes of administrators?

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APPENDIXES

APPENDIX A

SECTION A

INSTRUCTIONS

This page is concerned with general information and your participation in certain activities. Please answer accordingly.

1. Your present age _____

2. Total number of years you have taught vocational agriculture _____

3. Number of different schools in which you have taught vocational agriculture _____

4. Number of years you have been teaching in your present position _____

5. College credit you have earned since you began teaching vocational agriculture: Semester hours _____ Quarter hours _____

6. Amount of schooling completed (CHECK HIGHEST)

_____a. Less than Bachelor's
_____b. Bachelor's Degree
_____c. Bachelor's plus
_____d. Master's Degree
_____e. Master's plus

7. Amount of your own money that you have invested in professional growth (e.g., summer school, correspondence courses, travel to professional meetings, etc.) during the past two years. (Include fees, registration, books, room and board, dues, magazine subscriptions, etc.) CHECK THE CLOSEST AMOUNT.

_____a. $ 0 - $100
_____b. $101 - $200
_____c. $201 - $300
_____d. $301 - $400
_____e. $401 - $500
_____f. $501 - $600
_____g. $601 - $700
_____h. $701 - $800
_____i. $801 - $900
_____j. $901 - $1000
_____k. above $1000...
If above, how much? _____

8. List the professional educational organizations and the elective or appointive offices you have held in these organizations during the last three years.

	Organization	Offices held during the last 3 years
Local		
District or county-wide		
State		
National		

SECTION B

INSTRUCTIONS

1. List by name the organizations with which you are affiliated at the present time. An organization means some active and organized grouping, usually but not necessarily in the community or neighborhood of residence, such as club, lodge, business, political, professional or religious organization; subgroups of a church or other institution are to be included separately provided they are organized as more or less independent entities.

2. Record under attendance the mere fact of attendance or non-attendance without regard to the number of meetings attended.

3. Record under contributions the mere fact of financial contributions or absence of contributions and not the amount.

4. In the committee membership and offices columns, list only the number which you presently hold.

Name of Organization	Attendance (yes or no)	Financial Contribution (yes or no)	Number of Committee Memberships	Number of Offices Held
X. American Medical Association	yes	yes	2	0
1.				
2.				
3.				
4.				
5.				
6.				
7.				

SECTION C

1. INSTRUCTIONS: Listed below are a series of professional publications. Please indicate which of these publications you read regularly by placing an R in the appropriate blank. Indicate those which you read infrequently by placing an I in the appropriate blank. Circle the publications which you receive, either through subscription or through your school affiliation.

___AVA Journal
___NEA Journal
___State Education Newsletter
___Kiplingers Magazine

___Agricultural Education Magazine
___Farm Technology
___Phi Delta Kappan
___Technical and Educational News

___Journal of Industrial Arts
___School Shop
___Journal of Home Economics
___Practical Forecast for Home Economics

___Balance Sheet
___Business Education World
___Journal of Business Education
___National Business Education Quarterly

___Progressive Farmer
___Successful Farming
___Farm Journal
___Doane's Agricultural Digest

___Farm Safety Review
___Farm Quarterly
___The Nation's Agriculture
___Farmer's Digest

___Hoard's Dairyman
___American Nurseryman
___Plant Food Review
___Eastern Milk Producer

___National Livestock Producer
___Agway Cooperator
___Better Crops with Plant Food
___Better Farming Methods

___Cropland Soils
___American Agriculturist
___The Conservationist
___The Pennsylvania Farmer

___Other (list)
___ _____
___ _____
___ _____

2. Number of professional education meetings you have attended over the past two years. (Examples: NEA or AVA meetings, teacher workshops, teacher conferences, etc.) DO NOT INCLUDE LOCAL SCHOOL MEETINGS.

District _____ Regional _____
State _____ National _____

3. How many other departments of vocational agriculture did you visit last year

   a. to attend a called meeting? _____

   b. on your own initiative? _____

4. How many other departments of instruction, such as science or industrial arts excluding those for which you have assigned duties, did you visit last year

   a. to attend a called meeting? _____

   b. on your own initiative? _____

SECTION D

I. From which vocational agriculture teacher in the state would you seek advice and information before making a major change in your program in each of the following areas. Enter names of teachers or write NONE after each area. In the appropriate space after each name, under REASONS, check (✓) the single major factor which would cause you to seek this person's advice.

Code for REASONS:

1. Respect
2. Personal Liking
3. Demonstrated Competency
4. Recommendations of Others

REASONS

	1	2	3	4
A. Farm Production and Management				
1.				
2.				
B. Horticulture				
1.				
2.				
C. FFA				
1.				
2.				
D. Agricultural Supply, Sales and Service				
1.				
2.				
E. Agricultural Machinery, Sales and Service				
1.				
2.				

	1	2	3	4
F. Forestry, Conservation and Outdoor Recreation				
1.				
2.				
G. Occupational Work Experience Programs				
1.				
2.				
H. Young Farmer Programs				
1.				
2.				
I. Adult Farmer Programs				
1.				
2.				
J. Administering a Vocational Agriculture Department				
1.				
2.				

II. When confronted with a specific problem in your vocational agriculture program, from which of the following sources would you typically seek the advice and/or information needed to solve the problem: (Please mark 1 for the primary source and 2 for the secondary source of advice and/or information.)

_____1. other vocational agriculture teachers
_____2. other teachers
_____3. state supervisor
_____4. teacher educator
_____5. school administrator
_____6. professional literature (periodicals, books)
_____7. advisory group or member of advisory group
_____8. extension agent
_____9. other (specify) _____

_____

APPENDIX B

September 30, 1969

Dear (State Commissioner of Education):

One of the main thrust areas of research here at The National Center for Vocational and Technical Education is the Change Process in Vocational-Technical Education. One of the main purposes for research in this area is to determine ways and means of speeding up the dissemination, diffusion and adoption of educational innovations in the field. Several research efforts here at The Center have already investigated some of the variables influencing the change process.

In order to develop further a model for the change process, I would like to ask for your help and cooperation. First of all, I would like your permission to work with some of the school superintendents in Vermont. The procedures involved in the research under consideration are summarized as follows:

(1) Contact 10 selected superintendents, principals and/or teachers for a list of educational innovations in the State of Vermont in the last three to five years.

(2) Secure the permission of eight randomly selected superintendents and/or principals to administer a questionnaire to their teachers. The questionnaire will take approximately one-half hour to complete for each teacher. I will be there to administer the questionnaire at a meeting of the teachers in each school selected. This should occur the last part of November or early December.

If I obtain your permission to complete this study in Vermont, I would like to send a letter, under your signature, to each of the superintendents involved, requesting their help and support in completing this research. A copy of this letter is enclosed for your consideration.

One small project has been started in Vermont with the help of Mr. Cola Watson, your Director of Vocational-Technical Education. He should be able to give you further information, if you so desire.

Looking forward to your help and cooperation in this endeavor, I remain

Very truly yours,

Garry R. Bice
Research Associate

GRB/pdf

October 2, 1969

(Sample of letter to be sent to the eight randomly selected schools)

Dear (Name of Superintendent):

Mr. Garry R. Bice, Research Associate at The National Center for Vocational and Technical Education at The Ohio State University, is currently engaged in research investigating variables related to the change process in education. Through a process of random selection, your school has been selected as one of those to be included in the study.

Mr. Bice would like to administer a questionnaire to all of the teachers in your high school building. This will take about 30 minutes for each teacher to complete. The questionnaire could be administered in a teachers' meeting with Mr. Bice being there to administer the questionnaire. The study will be completed in early January, 1970.

The change process is an extremely important area in education. Results of research in this area should help administrators and others determine the best way to adopt changes in such areas as educational technology, curriculum, and organizational patterns. I urge you to cooperate in this study.

Before going to Ohio, Mr. Bice was Teacher Educator in Agriculture at The University of Vermont. Undoubtedly, he has visited you and your school in the past.

Mr. Bice will be in contact with you in the near future to make necessary arrangements.

Very truly yours,

State Commissioner of Education

HBS/pdf

cc: (high school principal)

Dear (High School Principal):

With the help and approval of your State Commissioner of Education, I am working on a small study concerned with Group Structure and Communication Behavior Patterns of Teachers. This study is a part of a larger area of the Change Process, here at The National Center for Vocational and Technical Education.

In order to complete the study under consideration, I have randomly selected eight schools in the State of Vermont, one of which is your school. I would like to administer a questionnaire to all of the teachers in your high school building. The questionnaire will take approximately 25 to 30 minutes for each teacher to complete. The nature of the questionnaire makes it necessary that it be administered in a meeting of all teachers. This could probably best be accomplished during a faculty meeting after school, in which I would be available to administer the questionnaire.

I would like to have these questionnaires completed sometime between January 7 and January 21, 1970. Since I am working with eight different schools, I am hoping that a satisfactory schedule can be worked out.

At this time, I would like to ask if I can include your school in my sample, and which day, during the time period indicated above, would be best to meet with your teachers. In order to facilitate matters, would you please complete the enclosed form and return it to me in the enclosed self-addressed envelope.

Your cooperation and help in this matter certainly will be appreciated.

Very truly yours,

Garry R. Bice
Research Associate

GRB/pdf

cc: (School Superintendent)

Name _____

School _____

Office Phone No. _____

We (will) (will not) be able to cooperate in this study.

The best day to meet with my teacher is:

1st choice _____ at _____ p.m.

alternative _____ at _____ p.m.

(Between January 7 and January 21, 1970)

Signed _____

Please return by December 19, 1969, to:

Garry R. Bice
Research Associate
The Center for Vocational
and Technical Education
The Ohio State University
1900 Kenny Road
Columbus, Ohio 43210

APPENDIX C

GROUP STRUCTURE AND COMMUNICATION BEHAVIOR

FORM A

BASIC STRUCTURAL DATA

Name of School _____ Address _____

1. General information about the school:

Grade Level	Number of Students		Number of Teachers		Number of Administrative Personnel				Student : Teacher Ratio	
					building		system			
	bldg.	system	bldg.	system	full-time	part-time	full-time	part-time	bldg.	system
K -12										
7 -12										
9 -12										
10-12										
Other										

2. Number of guidance and counseling personnel:

Grades	Building			System		
	full-time	part-time	F.T.E.*	full-time	part-time	F.T.E.*
K -6						
K -12						
7 -12						
9 -12						
10-12						

*F.T.E. = Full-time equivalents

3. Number of other personnel:

Classification	Building			System		
	full-time	part-time	F.T.E.*	full-time	part-time	F.T.E.*
Secretaries & Clerks						
Technical & Teacher Aides						
Other						

4. Total number of students enrolled in all vocational courses: _____

5. Total number of students in vocational agriculture:

   a. 9 - 12 _____

   b. 7 - 8 _____

6. Total number of teachers of agriculture: _____

7. Per pupil expenditures:

   a. grades 9 - 12 _____

   b. grades K - 8 _____

   c. total system _____

8. Is there a system of department chairman? Yes No
   (Circle one)

   If 'yes' please diagram structure:

9. Number of new students who have transferred into the school system this year: _____

10. Number of students moved out of system (other than graduates) this school year: _____

THE CENTER FOR VOCATIONAL AND TECHNICAL EDUCATION

The Ohio State University
1900 Kenny Road
Columbus, Ohio 43210

GROUP STRUCTURE AND COMMUNICATION BEHAVIOR OF TEACHERS
FORM B

Garry R. Bice, Research Associate

PART I

INSTRUCTIONS:

This part is concerned with general information and your participation in certain activities.

1. Your present age _____

2. Total number of years you have been teaching _____

3. Number of different school systems in which you have taught _____

4. Number of years you have been teaching in this school system _____

5. How many college courses in each of the following areas have you completed since you began teaching?

   _____ Professional education (i.e., methods, administration, guidance)

   _____ Technical subject matter (i.e., math, biology, physics)

   _____ Courses for certification credit only (list examples)

   _____

   _____

   _____

   _____

   _____

6. Amount of professional preparation completed (check highest).

_____ a. Less than Bachelor's

_____ b. Bachelor's Degree

_____ c. Bachelor's plus

_____ d. Master's Degree

_____ e. Master's plus

PART II

1. Check the items in the following list which you have heard about and/or discussed with other people in your school during the last six months.

_____ a. The game technique in classroom instruction.

_____ b. Teacher aides to assist the classroom teacher.

_____ c. Programmed learning materials as a method of instruction.

_____ d. Team teaching to improve instruction.

_____ e. Personal data sheets for individual students for guidance and follow-up purposes.

_____ f. Outdoor education and/or conservation courses in the curriculum.

_____ g. Special resource teachers designated and available to help individual teachers.

_____ h. A system of modular scheduling (flexible scheduling).

_____ i. Language laboratory facilities in the language program.

_____ j. The use of ETV in the classroom.

2. I first heard about the use of the overhead projector in the classroom for instructional purposes in _____ (month) _____ (year).

3. To the best of my recollection, I first heard about the use of overhead projection in the classroom for instructional purposes from:

a. A college instructor
b. A fellow teacher within this building
c. A State Department of Education staff member
d. At an education meeting
e. A journal article
f. A book or equipment salesman
g. Other (please specify)

4. I first tried the overhead projector in the classroom for instructional purpose--if you have--in _____ (month) _____ (year).

5. Most of my insights and new ideas regarding education result from (please rank in order of importance from 1 = most important to 5 = least important)

books and/or textbooks on education _____
discussions with other educators _____
discussions with non-educators _____
radio, television and/or newspapers (mass media) _____
various newsletters (i.e., VEA Newsletter) _____

6. Among teachers in <u>this</u> <u>school</u> <u>building</u> name three whom you <u>respect</u> <u>most</u> as teachers:

a. _____

b. _____

c. _____

7. Name three teachers whose opinion you most frequently <u>seek</u> when you have problems related to you teaching. (If not in this system, please include city name.)

a. _____

b. _____

c. _____

8. Name three teachers in this school <u>system</u> whose opinions on crucial educational issues are usually very valuable to you.

a. _____

b. _____

c. _____

PART III

A. INSTRUCTIONS:

List the professional educational organizations and the elective or appointive offices you have held in these organizations during the last three (3) years.

	Organization	Offices held during the last 3 years
Local		
District or county-wide		
State		
National		

B. INSTRUCTIONS:

1. List by name the organizations with which you are affiliated at the present time. An organization means some active and organized grouping, usually but not necessarily in the community or neighborhood of residence, such as club, lodge, business, political, or religious organization; subgroups of a church or other institution are to be included separately provided they are organized as more or less independent entities.

2. Record under attendance the mere fact of attendance or nonattendance without regard to the number of meetings attended.

3. Record under contributions the mere fact of financial contributions (other than dues) or absence of contributions and not the amount.

4. In the committee membership and offices columns, list only the number which you presently hold.

Name of Organization	Attendance (yes or no)	Financial Contribution (yes or no)	Number of Committee Memberships	Number of Offices Held
X. P.T.A.	yes	yes	2	0
1.				
2.				
3.				
4.				
5.				
6.				
7.				
8.				
9.				

C. INSTRUCTIONS:

Please provide answers for each of the following questions.

1. Number of professional education meetings you have attended over the past two years. (Examples: NEA or VEA meetings, teacher workshops, teacher conferences, etc.) DO NOT INCLUDE LOCAL SCHOOL MEETINGS.

   District _____ Regional _____

   State _____ National _____

2. How many other departments of instruction, such as science or industrial arts, excluding those for which you have assigned duties, did you visit last year:

   a. to attend a called meeting? _____

   b. on your own initiative? _____

3. Please list below the professional journals (regardless of the academic area to which the journal is addressed) which you read regularly. (At least one article per issue.)

I have a personal subscription	I read one received at school

4. Please list below the professional journals (regardless of the academic area to which the journal is addressed) which you read occasionally.

I have a personal subscription	I read one received at school

5. Please list below the nonprofessional periodicals which you read regularly. (At least one article per issue.)

I have a personal subscription	I read one received at school

6. Regarding the decision to adopt (specific innovation) do you feel it was:

a. your personal decision
b. a decision by concensus but you had a choice
c. a decision by concensus but you are required to adopt it
d. a decision made for you and you are required to adopt it
e. other (specify) _____

_____

7. When you learn about a new idea or practice, what factors do you consider before you decide to use the idea or practice? (Please rank these: 1 = most important factor, 2 = next most important, etc.)

8. In a one year period, how many times do you communicate with State Department of Education staff members by each of the following:

Type of communication	Initiated by me	Initiated by state staff
telephone		
mail or written communication		
in person on an individual basis		

9. What type of information do you usually seek from these people?

_____ 1. specific ideas concerning curriculum, resources, teaching methods, etc.
_____ 2. general information (where or to whom do I go for more information)
_____ 3. specific directions concerning regulations, policy, etc.
_____ 4. other (please specify) _____

_____

10. What type of information do you usually get from these people?

_____ 1. specific ideas concerning curriculum, resources, teaching methods, etc.
_____ 2. general information (where or to whom do I go for more information)

_____ 3. specific directions concerning regulations, policy, etc.
_____ 4. other (please specify) _____

_____

APPENDIX D

CHARACTERISTICS OF SELECTED OPINION LEADER EMPLOYING AND ISOLATE EMPLOYING SCHOOLS IN THE STATE OF VERMONT IN JANUARY 1970

Characteristics of Schools	Opinion Leader Employing Schools				Isolate Employing Schools			
	A	B	C	D	E	F	G	H
Number of Teachers	101	76	33	39	21	13	22	14
Number of Students	1417	1272	537	680	288	291	225	175
Number of Administrators (F.T.E.)[a]	5	3	2	4	1	1	2	1
Ratio of Number of Students to Number of Guidance and Counseling Personnel (F.T.E.)	283:1	251:1	268:1	390:1	280:1	291:1	225:1	175:1
Number of Secretaries (F.T.E.)	7	5	1	5	1	1	1	1
Number of Teacher Aides (F.T.E.)	0	1	1	1	0	0	2	0
Percentage of Students Enrolled in Vocational Courses	21.2	23.8	46.0	47.4	61.8	51.5	8.0	34.3
Percentage of Students Enrolled in Vocational Agriculture Courses	3.4	4.4	8.6	15.0	19.1	15.8	5.0	14.9
Student:Teacher Ratio	14.0:1	16.2:1	16.2:1	17.4:1	13.7:1	22.4:1	18.2:1	12.5:1
Percent of Student Body Who Transferred Into System This Year	1.8	6.9	0.1	10.0	4.2	3.4	2.5	2.3
Percent of Student Body Who Transferred Out of System This Year	3.2	5.0	0.2	3.2	1.0	3.4	1.3	2.2
Per Pupil Expenditure	1090	898	800	968	793	550	900	750

[a]Full-Time Equivalent

APPENDIX E

CHARACTERISTICS OF TEACHERS IN SELECTED OPINION LEADER EMPLOYING AND ISOLATE EMPLOYING SCHOOLS IN THE STATE OF VERMONT IN JANUARY 1970

Characteristics of Teachers	Opinion Leader Employing Schools				Isolate Employing Schools			
	A	B	C	D	E	F	G	H
Mean age	38.9	37.4	36.6	33.8	36.8	37.2	36.9	44.3
Mean Number of Years Teaching	9.5	18.6	8.9	8.4	9.4	10.0	10.4	11.9
Mean Number of Different Schools Taught In	2.4	2.2	2.3	2.3	2.5	2.4	1.8	3.4
Mean Number of Years of Teaching in Present School	2.6	5.5	5.0	5.4	5.7	6.5	7.5	5.9
Mean Number of College Courses Taken Since Beginning To Teach	7.4	7.8	9.8	7.7	6.6	6.8	5.0	7.6
Mean Number of Innovations Heard About or Discussed in Last Six Months	7.3	6.1	7.4	6.9	6.3	5.9	3.6	6.9